

**Advisory review on the Environmental Impact  
Assessment for the Bujagali Hydropower Project  
in Uganda**

**26 October 2001**

**047-083**

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## **APPENDICES**

1. Letter from the Netherlands Minister for Development Co-operation, dated 28 June 2001 in which the Commission has been asked to submit an advisory review on the Environmental Impact Assessment for Bujagali Hydropower Project in Uganda
2. Project information
3. Working programme, including overview of organisations spoken to during site visit
4. Map of the area
5. List of documents
6. List of abbreviations and definitions
7. Detailed observations on impacts on the natural environment and on public consultation.

## **1. INTRODUCTION**

### **1.1 The initiative: the construction of a hydropower plant at Bujagali falls, Uganda, including associated transmission lines and substations**

The project is to build and operate a 250 MW final capacity run-of-the river power plant on a Build-Own-Operate-Transfer (BOOT) basis, at Bujagali Falls in Jinja province. It will be located approximately 8 km downstream from the existing Owen Falls hydro facility (built in 1954) on the Victoria Nile in Uganda. The project also includes the construction of about 100 km of 220 KV and 132 KV transmission lines and associated substations (see appendix 4 for a map of the area). The developer will sell electricity to the Uganda Electricity Board (UEB) under a 30-year Power Purchase Agreement (PPA). The project proponent is Applied Energy Systems Nilepower, AES-NP<sup>1</sup> (private company). Total investment amounts to 530 million US\$. AES is pursuing financing through the International Finance Corporation (IFC, World Bank Group) and other development finance institutions.

The project intends to help meet Uganda's need for electricity and allow the economy to grow unconstrained. The project site was selected after several studies as one of the least cost and environmentally as well as socially benign options on the Nile in Uganda, according to the developer. The reservoir's inundation remains within the riverbank (the reservoir area will be 451 hectares of which 296 hectares are located within the existing riverbank). Resettlement is needed for both the hydro facility and transmission line.

Since 1995, AES has discussed with local residents, local and national government bodies, the private sector, non-governmental organisations and the public at large on the project. During this time, WS Atkins UK conducted an Environmental Impact Assessment (EIA) on behalf of AES, which was reviewed publicly by Uganda's National Environmental Management Authority (NEMA) throughout 1999. NEMA's approval of the EIA and Parliament's approval of the government guarantee required for the project was granted in November 1999.

In accordance with World Bank Group policies, an International Panel of Experts has been reviewing the environmental and social aspects of the project since 1997. The IFC and World Bank have been undertaking their own environmental due diligence since 1998. This resulted in releasing an expanded NEMA approved EIA<sup>2</sup> in the World Bank Info Shop for international review and comment in April 2001.

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<sup>1</sup> AES-NP is referred to in this advice as AES

<sup>2</sup> NEMA approves the transmission line EIA and an addendum to the Hydropower facility in July 2001

## 1.2 Rationale and mandate for this review advice

By letter dated 28 June 2001 (see appendix 1), the Netherlands Minister for Development Co-operation invited the independent Netherlands Commission for Environmental Impact Assessment<sup>3</sup> to review the EIA-studies. The Commission's advice is to be used by the Minister to determine the Netherlands' position on the Board of Directors of the World Bank, when decision-making on a loan of 155 million US\$ to the total project cost is about to take place.

The Commission performed a site visit to Uganda in the period of 2-10 October 2001 (see appendix 3 for the working programme). Purpose of the site visit was to:

- collect project- and site-specific information enabling formulation of a review advice of the EIA-studies;
- study relevant project reports and data and discuss matters with several governmental authorities and non-governmental organisations in Kampala and the project area.

The working group members of the Commission are listed in appendix 2. The group represents the Commission and comprises expertise in the following disciplines: fresh water ecology, dam/hydropower engineering, sociology, community development and public participation.

## 1.3 Justification of the approach

The aim of the review is to check whether the EIA-studies contain sufficient information to guarantee the full integration of environmental and social considerations in decision-making. The EIA-studies should be adequate and should not contain inconsistencies. If shortcomings are found, the seriousness of this lack of information for decision-making will be assessed and recommendations will be given for supplementary information.

For this project, the EIA process was designed to meet the requirements of NEMA and the World Bank. Terms of Reference (ToR) were prepared by NEMA both for the EIA for the hydropower facility and for the EIA for the transmission system. These project- and site specific ToR were not available to the Commission and could therefore not be used as a review framework by the Commission. However, the Commission is well informed on World Bank requirements for this sector as well as the EIA requirements of NEMA. During review, the Commission also made use of advisory review reports of the Commission on similar projects<sup>4</sup> as well as other widely accepted EIA dams

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<sup>3</sup> Henceforth referred to as the Commission

<sup>4</sup> Advisory review of the environmental impact assessment report for the Arun III Hydro-electric project in Nepal. June 1994

Advisory review of the environmental Assessment Executive Summary of the Ghazi Barotha Hydropower Project, April 1995

First, second and third report of the International Advisory Group on the World Bank's handling of social and environmental issues in the proposed Nam Theun 2 hydropower project in Lao PDR, August 1997, November 1998 and April 2001

and hydropower sector references<sup>5</sup>. Other relevant documents studied by the Commission are listed in appendix 5.

The review of the EIA-studies by the Commission is not limited to the project itself but also addresses strategic questions such as the need for Bujagali, how does Bujagali fit into the electricity supply situation and why at the chosen site? These are issues which deal with the justification of the project and normally part of an EIA-study.

In this advice, the Commission has taken into account the opinions of the affected people and a cross-section of stakeholders involved whenever possible. Appendix 3 gives an overview of organisations and people contacted in the Netherlands as well as in Uganda.

The review findings are presented below. Appendix 7 provides extended information on impacts on the natural environment and on public consultation.

## **2. GENERAL CONCLUSION AND RECOMMENDATIONS**

The Commission is of the opinion that many positive points can be mentioned on the EIA-studies. E.g. an attempt has been made to be comprehensive and the studies contain useful and detailed maps. Recognising and valuing the virtues of the EIA-studies, the Commission concludes however that the EIA-studies as published in April 2001 are incomplete, with serious gaps in information and therefore not sufficient for decision-making. Important studies addressing some of these shortcomings have been undertaken between April and October 2001. However, as these studies were prepared after completion of the EIA-studies, the normal EIA procedure regarding disclosure for public consultation was not applied. This is one reason that the issue of lack of transparency is frequently put forward by different segments of society. Moreover, there still remain other omissions, mainly at the strategic level which are not addressed in the EIA-studies and which need immediate attention. These essential shortcomings are listed below and should be acted upon before decision-making takes place. The Commission recommends:

- the urgent completion and approval of a Masterplan for expansion of the electricity sector, taking into account the possible primary sources of energy, constraints and priorities to be satisfied. The role of Bujagali within this Masterplan has to be clarified;
- a specific assessment on the economic and financial implications of Bujagali including the consequences for the energy prices to the consumer;

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<sup>5</sup> Among the references used are: World Bank- Environmental Assessment Sourcebook-Sectoral Guidelines; International Commission on Large Dams- Bulletin, Environmental Impacts of Dams/Reservoirs. No specific reference is made to the recently published World Commission on Dams Report 'Dams and Development' (Nov. 2000), published subsequently to the Bujagali studies and presently still the object of intense world-wide controversies.

- a complete definition of hydraulic operation conditions and hydraulic safety of the cascade of dams along the Victoria Nile;
- the justification of site selection using an improved and quantified approach, uniformly applied to all alternative locations and in which economic, social and environmental arguments are equally weighed;
- a comparison of possible layout alternatives for the dam/power station and transmission system with appropriate reporting. Possibly, information resulting from ecological surveys on the rapids can be integrated with this alternative design and lead to the development of an alternative most friendly to the environment.

In section 3, 4 and 5 further explanation is given. Recommendations mentioned in sections 6 to 9 are equally important indeed but can be acted upon later, during project implementation.

The Commission feels that it is not a very time-consuming task to follow-up on these recommendations, since most of the information can be obtained from already available and scattered documents.

In addition, the Commission is of the opinion that a clear process of decision-making is of the utmost importance as well as ultimately how costs and benefits associated with this project are to be shared by the stakeholders. Therefore, and in order to meet the desire for transparency on this project, the Commission recommends to:

- develop a multi-stakeholder communication strategy for bringing together the disparate pieces of information that have and will become available after the completion of the EIA-studies. The information should be presented in straightforward, simple formats targeted at the various needs of a wide variety of audiences. Key pieces of information that have to be shared widely are e.g. the economic benefits and the forthright comparison of the proposed Bujagali project with other possible energy sources.

### **3. RATIONALE AND JUSTIFICATION OF THE PROJECT**

#### **3.1 Problem analysis and needs assessment of the electricity sector**

There is no doubt possible regarding the importance for the Ugandan economy of an expansion of the limited electricity grid serving only a restricted part of the population today. At present only about 3% of the total population has access to electrical power<sup>6</sup>. The present situation of electricity supply is considered more than critical and is characterised by frequent (almost daily) power cuts, energy losses in the range of 30% of the total generation (technical losses and illegal connections), incapacity to support

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<sup>6</sup> Data resulting from the Uganda Load Forecast Review, Update 2001

urgently needed economic development activities, incapacity to satisfy household demands etc.

Strategies and plans set forth by the Ugandan Government to cope with the problem of expansion of the electrical power sector include:

- the increase of generation, transmission and distribution capacity of the system<sup>7</sup>;
- the privatisation of the generation and distribution services with transmission remaining under state operation<sup>8</sup>;
- the reduction of losses of the system by appropriate technical and administrative means<sup>9</sup>.

Inventory studies for definition of possible sources of generation were developed in recent years. Examples are the inventory of small-scale hydropower (2001), inventory of alternative energy sources (such as geothermal, solar and biomass) as well as studies devoted to the implementation of hydropower stations along the Nile river in Uganda. Such studies have confirmed the relevant role to be played by hydropower at present and in the future.

The EIA studies for Bujagali preceded the inventory and market studies referred to above and do not present any information related to alternative options for generation. Also, no economic evaluation of costs, benefits and the role of Bujagali in export of energy to neighbouring countries (in particular Kenya) are presented. Such studies create justified doubts regarding the economics of the project and the resulting energy prices as well as the achievement of stated objectives of the project such as rural electrification and poverty alleviation<sup>10</sup>.

- Although recognising the importance of Bujagali as an option for capacity expansion, the Commission wishes to emphasise and recommend the urgent completion and approval of a Masterplan<sup>11</sup> for expansion of the electricity sector, taking into account the possible primary sources of energy, constraints and priorities to be satisfied. The role of Bujagali within this Masterplan should be clarified.

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<sup>7</sup> According to current plans the total population to be served would increase from 3% to 14.5% in a 20 years time period. Energy requirements would increase by a factor of 4.5 during this period.

<sup>8</sup> Currently a number of foreign utility companies have demonstrated interest and were prequalified for concessions (in generation 3, in distribution 5)

<sup>9</sup> Forecasted reduction of energy losses from approximately 30% in 2000 to 14% in 2020.

<sup>10</sup> There are no references in the EIA that electricity will be brought to rural areas, other than power lines and a transformer to the village but without the necessary local connections to the grid that give villagers access.

<sup>11</sup> Presently under preparation



### 3.2 Economic and financial assessment of the project

The only economic cost-benefit evaluation encountered in the EIA-studies makes use of the concept of the hydropower 'efficiency' ratio, i.e. the ratios oustees<sup>12</sup>/MW and reservoir area (ha)/MW to show that the hydropower facility compares very favourably with others in international experience (Fig ES-8 in the summary). It is obvious that such indices only serve as gross indicators of environmental performance. Updated versions of such indices are obtained by incorporating as 'costs' the total number of oustees of the total project (hydropower facility and transmission system), or the total area occupied by all these facilities and as 'benefits' the energy generated on an annual basis (MWh/year).

The lack of information in the EIA studies related to costs, financial conditions of the Power Purchase Agreement between the Government of Uganda and AES, are seen as a serious omission in the justification of the project. In disagreement with commonly adopted practice in EIA studies, the Bujagali EIA-reports do not present:

- quantities and costs of civil works, equipments and installations for the hydropower scheme and the associated transmission line;
- energy production and power guarantee of Bujagali during dry, medium and wet years, using the available hydrological data bases (Institute of Hydrology, UK and Acres International, Canada);
- comprehensive costs associated with environmental mitigation. The lack of such information makes it impossible to carry out any cost-benefit assessment (including or not including environmental mitigation measures) a matter which is normally part of EIA studies.

In addition, the absence of reliable and well-prepared information on project costs and benefits and its timely disclosure to stakeholders has already resulted in speculations, controversies and an articulated and relatively intense opposition to the project implementation.

- The Commission recommends that a specific assessment on the economic and financial implications of Bujagali be prepared including the references on energy prices to the consumer. This assessment should be disclosed by the Government of Uganda through its Electricity Board and other concerned government authorities to stakeholders and the public in general as early as possible. Communication and explanation of essential aspects of the project (purposes, characteristics, costs, benefits, involvements) has to reach different segments of society, from Parliament to local population at site (see also section 8)

## 4. ASSESSMENT OF INTENDED ACTIVITIES

Even though the EIA documents for Bujagali contain much technical information, related to the characteristics and dimensions of component

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<sup>12</sup> Physically displaced persons resulting from a project's construction

engineering works and to their implementation, they are not complete, making it difficult to adequately understand the project. In fact, to reach such understanding, the Commission had to consult additional references and gather information not included in the EIA documents during the field visit to Uganda.<sup>13</sup>

The following comments are directed at the most important aspects which were not adequately dealt with in the EIA.

#### 4.1 Hydraulic operation and dam safety

The future existence of a cascade of dams and small intermediate impoundments along the Victoria Nile (represented by Owen Falls/Owen Falls Extension, Bujagali and possibly other dams such as Karuma) is a reason to pay special attention to the hydraulic operation of the system under normal and exceptional flow conditions<sup>14</sup>. The EIA studies only provide a general indication of gate and turbine operation rules at Bujagali and does not take into account the subject of hydraulic safety, dam breaching or other accidental occurrences (e.g. malfunctioning of gates).

The detailed assessment of hydraulic operation conditions and safety measures is considered to be a priority and essential activity before the implementation of the project. To achieve an adequate level of design and planning of the operation, the following activities should be undertaken:

- Operation of the cascade under normal conditions:
  - (i) detailed simulation (dynamic) of the hydraulic operation of the cascade over the range of possible conditions of power production and hydrology;
  - (ii) determination of gate operation rules and power plant operation rules;
  - (iii) design of the communication, command and control system for the tandem operation.
- Accidental/exceptional conditions:
  - (i) simulation (dynamic) of possible events;
  - (ii) definition of alerts, alarms, plans of contingencies;
  - (iii) monitoring and control.

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<sup>13</sup> It is interesting to remark that a more thorough understanding of the project, of its justification and implications only resulted from the consultation of documents such as shown in Appendix 5 prepared **after** the EIA studies and their approval.

<sup>14</sup> It has become a regulatory practice in EIA studies and engineering design of dams to take into account the highly unlikely but still possible case of dam breaching with its consequences on the downstream river reach.

- The Commission recommends that the investigations required for a complete definition of hydraulic operation conditions and hydraulic safety of the cascade of dams along the Victoria Nile be undertaken as an immediate priority.

## 4.2 Detailed design of the Bujagali powerhouse

The powerhouse structure elected for Bujagali (a hydrocombine topped by a flap-gate controlled spillway) is not a conventional engineering solution although it has been practised in several countries (e.g. Japan, Russia). As a general comment, the detailed design should be based on the results of hydraulic model testing. Structural vibrations induced by the spillway operation should also be carefully evaluated.

## 5. ALTERNATIVES WITHIN THE CONTEXT OF HYDROPOWER

### 5.1 Alternative sites

Different studies preceding the EIA studies concentrated on a comparison of alternatives for hydropower generation along the Victoria Nile, through a cascade of dams, the study of combined impacts and the comparison of sites<sup>15</sup>.

These studies are recognised in the EIA report as not being completely convincing and require a "rough consensus" for the selection of the site; an honest but still insufficient argument. The results confirm however that Bujagali is a comparatively good site for a hydropower station but leave room for many conjectures.

- The Commission finds it incorrect that a final conclusion is based on such a statement. Instead, an elected approach for a final comparison and a more quantified approach such as in the study of Karatunga is recommended for all the components of the cascade. The Commission advises to complete the justification of site selection using an improved and quantified approach, uniformly applied to all alternative locations.

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<sup>15</sup> •The Karatunga study, 1997, concentrating on a comparison between the sites of Bujagali and Kalagala, using remote sensing, GIS and multicriteria evaluation techniques.

- The Environmental Impact Assessment for Karuma by Norplan, 1999.
- Acres Study, 2000, on the basis of reviews of previous studies and public consultations.
- The ESG Study, on cumulative impacts, 2000 using a change management objectives methodology.
- WS Atkins Study, 2001, including three scenarios of development in cascade. Scenario 1 corresponds to Owen Falls, Owen Falls Extension, Bujagali and Kalagala; Scenario 2 corresponds to the same cascade replacing the Kalagala site by the Karuma site; Scenario 3 includes Owen Falls, Owen Falls Extension, Bujagali, Kalagala and Karuma. The comparison between the different cascades was done using qualitative evaluations of environmental impacts within the framework of the EIA for Bujagali.

## 5.2 Layout alternatives

The EIA reports do not include a comparison of possible layout alternatives for the dam/power station and transmission system. AES only considers a solution based on the construction of an intake dam and the impoundment of the rapids located upstream. Although this solution is recognised as an interesting and cost favourable option, a justification can only result on the basis of comparison with other solutions.

In the case of the Karuma studies (see footnote 15) it is interesting to compare the elected design with at least an alternative design as diversion scheme that enables preservation of the rapids although at a less interesting cost/benefit ratio.

- The Commission recommends that such a comparison be developed and appropriately reported in the form of supplementary information to the EIA studies. Possibly, information resulting from ecological surveys on the rapids (see paragraph 6.1.3) can be integrated with this alternative design and lead to the development of an alternative most friendly to the environment.

## 6. IMPACTS ON THE NATURAL ENVIRONMENT

In comparison with many other large dam developments, the Bujagali project will have restricted adverse ecological impact, as flooding of terrestrial land is minimal and much of the terrestrial habitats are degraded. Already there is a dam complex 8 km upstream (the Owen Falls Dam and Extension) which has adversely affected river connectivity with Lake Victoria and its biodiversity. The same is applicable for the transmission line, which runs to a great extent parallel to an already existing line. From this perspective, the Commission is of the opinion that remaining inconsistencies and omissions in the EIA-studies are not essential for decision-making. However, these shortcomings need to be acted upon during project implementation. In this section, the Commission also gives some suggestions for environmental mitigating measures.

### 6.1 Impacts of the hydropower facility on the natural environment

#### 6.1.1 Terrestrial vegetation and associated animals

The Remnant forest at the Bujagali falls is described as a moist semi-deciduous forest but is now greatly degraded by encroachment and agricultural developments. The riverbank survey reported in the EIA-report is weak.

The Kalagala Falls Central Forest Reserve is currently suffering from human encroachment. The EIA studies propose its acquisition for restoration as a managed reserve to compensate partially for losses at Bujagali Falls.

- The Commission welcomes The Kalagala Falls Central Forest Reserve proposed acquisition and restoration as an offset.

- As much of the terrestrial habitats is degraded, the Commission does not expect serious omissions in the riverbank survey. Concerning the proposed rehabilitation (and if necessary re-planting) and management of forest reserves on the islands of Bujagali and along a 40m wide strip of the shoreline, care must be taken to only plant indigenous species appropriate to that locality and habitat. An environmental management plan for the rehabilitated area is essential.

### **6.1.2 Avifauna**

The EIA-report states that the loss of habitat is not significant to the species since it represents only a small fraction of an extensive agricultural landscape. Yet, a fact is that many birds roost in the trees, especially on the islands and further deforestation may be to their disadvantage. Impoundment will reduce the numbers of roosts considerably. The Commission notes that the significance of this negative impact is recognised.

### **6.1.3 Aquatic flora and fauna**

The aquatic flora and fauna surveys by the Fisheries Resources Research Institute (FIRRI) suggest that sampling did not include the rapids.

The loss of haplochromine species diversity is identified as a potential loss to the Bujagali waters. One of the possible impacts of the Bujagali dam is a separation of zones, in which the fishes presently mix freely, inducing some genetic isolation. Barriers across the river may contribute to the diminished abundance, disappearance and extinction of species.

Emphasis in the EIA-report is generally directed towards commercial fisheries which are socio-economically important. However, the conversion from a riverine and rapids environment to a lacustrine one is particularly detrimental to biodiversity as species composition, food webs, habitat diversity and population dynamics will change. There is the suggestion from external sources that there are at least a few endemic haplochromines in the Bujagali stretch of the River Nile and a possibility of endemic species flocks of fish. Since the publication of the EIA, species of fish new to science are purported to occur in the location. The validity and potential significance of this needs to be verified and assessed. There is so little data on biodiversity from the Upper Nile, especially from the falls and rapids habitats, that one cannot say there will be little or no harm to endangered species or important populations of river organisms. It is therefore incorrect to conclude in the EIA-report that 'the project will result in minor changes to the balance between populations of certain fish species upstream of the dam'.

A sediment transport desk study has been undertaken in which various scenarios of sediment transport at the construction and at the running stage were modelled. This sound and thorough assessment concludes that the scope for adverse effects appears to be insignificant, either in the immediate vicinity of the construction or further downstream. In terms of ecological disturbance the sediment burdens remains within acceptable limits for aquatic life including fish.

The rehabilitation of the quarry and surrounds to create a small reservoir area for fish is to be applauded. The small reservoir should be designed professionally to optimise habitat diversity for the aquatic fauna, especially

for fish diversity, paying particular attention to the rocky areas in the shallows.

- The Commission recommends professional guidance in the landscaping of the quarry aquatic habitats and surrounding areas.
- The Commission has not been convinced that impacts on the natural environment in the impounded area will be minimal. The knowledge base is insufficient to draw such conclusions. However, it believes that the impacts would not be sufficient to negate the project. There is need for a fuller knowledge base so that, at least, the current biodiversity can be recorded. The Commission therefore recommends to undertake the following mitigation action:

Sufficient and appropriate biological samples from the rapids and rocky habitats are required for subsequent taxonomic and ecological studies before any development commences. These data are needed for a knowledge base and benchmark for a biological diversity data-base of the Upper Nile. Sampling from the rapids demands special technical expertise as it can be difficult and dangerous. Taxonomic studies of the fish species are very specialised and will require international support. The Haplochromis Ecology Survey Team (HEST), University of Leiden, The Netherlands, is recommended for this. The results can, together with an alternative design to be elaborated for the dam (recommendation paragraph 5.2), lead to the development of an alternative most friendly to the environment.

#### **6.1.4 Water weeds**

The FIRRI-report states that there is the possibility of water hyacinth resurgence, particularly in the impoundment. The water hyacinth would flourish irrespective of the dam's water retention time and is not affected by water level changes, as it is a surface floating plant.

- The Commission endorses the statement of FIRRI that it is imperative that the weeds be controlled: accumulation of mats of water hyacinth behind the proposed dams along the Victoria Nile could kill the fish and have a major impact on fisheries and the aquatic ecosystem.

#### **6.1.5 Water-borne diseases**

The view reported in the EIA is that tropical disease vectors will not be a serious problem, and the impoundment may, in fact, reduce habitats for the vectors. This is likely to be an incorrect assumption. Shoreline aquatic vegetation, including the proposed planting of Hippo Grass as a remedial action, may create a favourable habitat for vectors. The water hyacinth on Lake Victoria caused an increase in malaria and schistosomiasis.

- The Commission considers predictions on reduced water-borne disease transmission to be probably optimistic and questions whether planting the shoreline with Hippo grass is a sound idea. It could encourage vector snails for schistosomiasis and may not tolerate the 2-metre drawdown cycle.

### **6.1.6 Landscape**

In the EIA-report it is suggested that although there is loss of habitat, the creation of a new reservoir is expected to attract other species of waterbirds possibly enhancing the bird-watching potential. In addition, it is argued that aesthetically this could be attractive to tourists. This is a questionable statement.

Landscape natural beauty is a crucial emotional attribute, especially for the welfare of local people, and landscape is an integral part of biological diversity. The project will destroy much of this although mitigating actions will try and create alternatives. Although immediate concerns of the local people, who are poor, are largely directed to compensations for loss of livelihood, the hidden values of 'belonging' and 'beauty' have not been addressed.

- The Commission recommends that more attention be given to aesthetic and cultural values of the landscape. Appropriate actions should be taken to facilitate discussions among local inhabitants with the aim of reaching agreement on how to make the most of their changed landscape in such a way that they can continue to enjoy emotional satisfaction and a sense of identity with it.

## **6.2 Impacts of the transmission lines on the natural environment**

The overview of the biology of the Mabira Forest area and the floral and bird surveys are comprehensive. Proper consideration has been given to the placement and potential environmental impacts of the wayleave for the transmission system and mitigating plans are elaborated upon sufficiently. The EIA studies propose that either Namanyama or Kiwala forest areas should be purchased to offset the environmental impacts.

- The Commission welcomes the proposal that either Namanyama or Kiwala forest areas should be purchased to offset the environmental impacts. If both were acquired as Reserves this would be better. Both forests have biodiversity values in their own right and would act as additional buffer zones for the biodiversity of Mabira forest. A sound management plan for rehabilitation and conservation of the Reserves and the enforcement of the plan is essential to protect the areas from encroachment.

## **6.3 Cumulative impacts on the natural environment**

The study on the cumulative impacts of various combinations of dam constructions, a cascade of dams, along the lower reaches of the Victoria Nile finds that no major biodiversity values have been recorded in the projected areas of impact either in terms of unique ecosystems, unique species or genetic diversity within species. This statement has to be interpreted with considerable caution because very few studies have been done in the area, very few localities in Uganda have been investigated for ecosystem uniqueness and no studies are available of rapids which address genetic diversity. Thus there is a dearth of data generally.

The cumulative impacts assessment in the EIS studies finds that any increase in the number of dams along the upper reaches of the Victoria Nile will have negative effects, the most serious, significant effect being if another dam were built at Kalagala Falls. Effectively then, there would be impounding of the Nile waters from that site up to the Owen Falls dam. In the current EIA for Bujagali, the Kalagala/Itanda falls area is to be gazetted for conservation as an offset. This is imperative if the Bujagali project will go ahead. A dam at Karuma, considerably downstream, has little 'contiguous cumulative' effect other than similar effects identified at Bujagali.

In the absence of appropriate ecological surveys of the rapids and falls along the whole stretch of the Victoria Nile to Lake Kyoga and beyond, it is impossible to draw any conclusion as to the significance of the cascading, cumulative effects of multiple dams.

- Appropriate surveys are needed and suggested by the Commission for the Upper Nile system to Lake Kyoga and preferably down to Lake Albert, in order to develop an Upper Nile management strategy. Only then can the consequences be assessed of multiple impoundments and potential losses of biological diversity. Rather than piece-meal developments for hydro-power, a clear strategy for the wise management of all the natural resources is essential. Thus, the Commission recommends the following remedial actions to be undertaken within 2 years.
  - Mitigation actions identified in section 6.1.3. for Bujagali Falls be undertaken.
  - A fuller ecological and taxonomic survey, especially in areas of rapids and particularly of the fish taxa, should be undertaken to provide a knowledge-base for the development of a management plan for biological conservation in the Upper Nile (between Bujagali and the inflow into Lake Albert)
  - Then, an Upper-Nile Management Plan for biodiversity conservation should be developed. This should then be integrated into the Masterplan (see paragraph 3.1), identifying options and priorities.

## 6.4 Mitigation and environmental action plan

The Commission is of the opinion that the project takes a conservative approach in its environmental management concept. Although the total resources allocated to the treatment of environmental mitigation measures are not apparent, the few indications given in the EIA-studies are relatively modest. Actions to be taken also appear more reactive than pro-active with respect to the environment which is considered more an extra cost of implementation than a matter of necessary investment for a sustainable future. Some of the measures to be implemented still depend on further definitions.

- The Commission recommends that the environmental action plan ascertains adequate provisions during the operation phase of the project and not only during the construction period as seems to be the case here. A non-negligible part of measures devoted to environmental action usually has to be spent during operation as may be seen from past experiences in hydropower projects.



## **7. SOCIAL IMPACTS**

The Commission obtained much information on social impacts during the field visit. This information was not included in the original EIA. Also other documents, that were not listed or noted in the EIA, provided the Commission with supplemental (post-EIA) information. The omissions which remain are mentioned in this section.

The resettlement package has been tailored to encourage people to resettle rather than take a lump sum cash settlement. This is a good part of the Resettlement and Community Development Action Plan (RCDAP). The consultation process was largely a process of explaining developer pre-determined compensation packages. AES has already gone ahead to compensate and resettle nearly two thirds of the Project Affected Persons (PAPs).

The Commission considers that the observations in this section are serious but not any longer essential for decision-making, as resettlement has already taken place to a great extent. The remarks made in this chapter must therefore be considered as recommendations for project implementation and future proposals.

### **7.1 Numbers and types of project affected persons**

The process for identifying and numerating PAPs of the potential project was significantly flawed, resulting in a number of current problems and conflicts. The process focused on quick reimbursement of PAPs for their physical losses, which resulted in marginalising cultural leaders and omitting persons whose livelihoods are not directly linked to land ownership. Now opinions have become very polarised and conflict will be much more difficult to resolve.

Project affected persons, as they are referred to in the document, are those people who will lose some form of access to their land (whether they own a formal title to the land or have customary rights to the land) because of the hydropower facility and the transmission system.

For the hydropower facility component, AES distinguishes between: (a) those people who will need to be physically displaced because they will not only lose their land but also the physical structure of their house (101 households and 714 people); and (b) those people who will lose access to parts of their land but will not lose their 'home' (1,187 households or 7,986 individuals). Compensation is calculated individually according to his/her loss in terms of home and buildings, livelihood (crops), and other physical assets. A good portion of the Resettlement and Community Development Action Plan (RCDAP) is devoted to calculating compensation rates.

The EIA executive summary lists the total number of people affected by the transmission system as being 5,796 individuals total with 1,522 individuals to be displaced (p. 41 of the EIA Executive Summary). Similar to the compensation plans for the dam, PAPs of the transmission lines are compensated for their loss of land access and/or physical assets but they are not compensated for loss of business nor are they included in the community development plans. The EIA documents do not give a review of the regulations

and standards for transmission lines nor some way of ensuring that once compensated, people do not move back into the area.

Compensation is limited to reimbursement of the market value of (i) land ownership, (ii) permanent and non-permanent structures and (iii) crops. Sharecroppers, people who hire land for cultivating, qualify for crop compensation alone, but not casual labourers (people who are hired seasonally or infrequently to assist in cultivation).

Business incomes do not qualify for compensation as a six-month notice is said to be sufficient to re-establish businesses. Therefore a number of tourist-based businesses will not qualify for compensation of the loss of their livelihoods. The EIA does offer business retraining and other business support to project affected persons.

Negotiations for appeasing the spirits of Budhagali were poorly conceptualised and implemented, resulting in conflicts between the Busoga clans on the appropriate recipients of compensation for the loss of cultural sites and for an suitable ceremony for recognising and shifting cultural items and spirits to new homes.

- The Commission recommends that if the dam is to be built, the developer and the Government of Uganda will need to undertake a wider study of and negotiation with persons whose livelihoods will be affected by the dam project.
- The Commission recommends that AES find a mediator acceptable to both the cultural leader (recognised by people in the area) and AES to negotiate the compensation necessary for the appeasement of the spirits of Budhagali.

## 7.2 Community development

The RCDAP promises an annual commitment of US \$250,000 for the next 30 years (Phase 2 'Social Responsibility Fund'). The RCDAP states that Community Development Funds will be invested in six main areas: Health, education, and community centres infrastructure; Water supply; Tourism activities; Training and Business skill development, including micro-credit; Provision of electricity access and Fisheries development.

However, the decision making control over the funds are held firmly by AES. The reasons for AES controlling the money and not involving the local government are not explained in the EIA-studies.

The community development is focussed on placing structures with limited thought to people's access to and the quality of the services related to the infrastructure. The school issue is particularly clear, with education bottlenecks not related to the building as such, but rather the absence of skilled and motivated teachers. The same holds true for electricity, with the main bottleneck being local connections to the grid.

Given the limited participation in influencing decision making or in ensuring an accurate picture of population impacts to date and the fact that Uganda is in the process of devolving development funds and decision making to lower levels of local authorities, the Commission doubts whether it is wise to rely on

AES to spearhead and oversee the community development planning process in these villages.

Money is, as acknowledged by the World Bank, a poor substitute for a livelihood. It is a concern to the Commission that little attention has been given to discuss processes through which other types of more sustainable and equitable community development opportunities will emerge. Since the money set aside for Community Development Action Plan (CDAP) is not indexed to inflation, as the EIA states on page 120 about 'US\$ 7.5 million (30 x 250,000)', by the year 2030, \$250,000 will have faded into insignificance.

- The Commission recommends looking into the possibilities how local needs can be better addressed. Instead of looking at community development as a set figure over a period of so many years, the plan could establish profit sharing that is funnelled local government revenue to directly-affected communities, including those in the area of those who will be resettled on land purchased on their behalf.
- AES should consider using the funds to help strengthen and improve the capacity of local governments to meet their constituencies' development needs.

### 7.3 Training

One of the aspects of the RCDAP which is truly livelihoods focused is a business training programme that will target 40 people and a total of 50,000 US\$ is available for credit to these people.

- For training to be effective, the Commission recommends it to be part of a series of measures to help entrepreneurs 'find their business feet'. The RCDAP (pg 57) states that many people 'are willing to start businesses, providing alternatives to agricultural incomes' so there is clearly potential for expansion here.

### 7.4 AIDS/HIV

Although not stated in the EIA studies, the developer has undertaken a number of important actions to make education and prevention services available to permanent and temporary project staff not only for HIV/AIDS, but also for other possible infectious diseases. AES has contracted a leading local NGO experienced with the prevention and support to Persons With HIV/AIDS (PWA).

### 7.5 Gender-related effects of resettlement

It is positive that AES has considered how compensation disbursement will proceed with signatures required by both spouses and the opening of bank accounts in women's names. In addition, AES has hired an association of women lawyers to sensitise men and women in the project affected areas about the rights of women and children. They have also put a local legal office on retainer to provide legal support to PAPs. All of these actions have come after the completion of the EIA and the RCDAP.

Other effects may need to be considered. For example, the 'contribution' of boreholes may well affect women negatively as they previously collected water from the Nile at no cost. Not only will they need to organise how/where to construct the well in such a manner as to minimise additional work but also the costs for construction should not negatively affect women additionally. Other issues, such as employment of women on the construction site and inclusion of women in the business-training programme, are not clearly being considered.

- The Commission recommends that the developer ensures women's livelihoods and economic independence through the compensation process.

## **8. PUBLIC INVOLVEMENT AND CONSULTATION PROCESS**

From the reports studied and from the site visit it is clear that AES has undertaken various forms of public consultation over the course of the five years since inception of the project. Their intention is clearly to compensate a considerable number of affected people through various means.

However, AES itself took charge of the local community consultation process. This conflict of interest – with the company likely to benefit from the project yet it is supposed to be responsible for ensuring a fair, balanced analysis by/with local people about the project – has not been questioned.

The compensation process was not a process of 'consultation,' but a presentation of various options where people's participation was superficial and largely limited to choosing the compensation package of their choice and, in some cases, contributing resources to individual and community projects. This has led to a commodity-driven approach to local development needs.

Also, there are frequent references to what the authors feel people are really thinking. They do not give credence to what people have actually said or done. Throughout the document, there are references made to the perceptions that people in the affected communities are trying to take advantage of the situation by exaggerating their situation. These comments are not associated with evidence that conflicts with what people are saying, but follow the outputs of consultations.

- The Commission recognises that the process cannot be reversed and that the damage has been done (in terms of suspicion, loss of trust, hostility towards the project). However, it does recommend that AES must embark on an extensive public information campaign to try and regain trust and establish a sense of integrity within the country.
- The campaign must include a multi-stakeholder communication strategy that brings together the disparate pieces of information that have come after the completion of the EIA. The information should be presented in straightforward, simple formats targeted at the various needs of a wide variety of audiences. Key pieces of information that have not been shared widely are e.g. the economic benefits and the forthright comparison of the proposed Bujagali project with other possible energy sources. This has been the source of many of the problems experienced now.

## **9. ROLE AND FUNCTIONING OF 'INDEPENDENT NGO WITNESS'**

InterAid's status, role in the process, methodology and linkage to other stakeholders is limited to be '...an independent observer witness the whole compensation/resettlement process throughout the duration of the Project, so as to verify the compliance of the Resettlement Action Plan implementation....'

However, as the witness NGO is being paid by and reporting to AES, their 'independent' status is in question. The ToRs of their mandate as presented in the RCDAP is not satisfactory. In fact, it contains clauses such as 'AES reserves the right to amend the terms of reference' that do not give much credence to InterAid's independence. It is unclear how Ugandan society at large is to gain access to the witness NGO's observations on the process. It is quite possible that this will not happen as the ToRs state that: 'any advice will be given to AES on an informal basis or in a report directed solely to AES and will not appear as an item in reports to outside parties'.

- The Commission recommends the establishment of a small panel of NGOs already working in the area. The Jinja, Iganga, Tororo areas have a rich and varied local and international NGO community, so it is not plausible that AES could not find a suitable locally based NGO. This panel should be authorised to have full access to the results of monitoring.